Horizon Properties

Soil Consistence

Take a ped from the top soil horizon. If the soil is very dry, moisten the face of the profile using a water bottle with a squirt top and then remove a ped to determine consistence.

(Repeat this procedure for each horizon in your profile.)

Holding it between your thumb and forefinger, gently squeeze the ped until it pops or falls apart. Record one of the following categories of soil consistence on the data sheet.

Loose

Friable

Firm

Extremely Firm

Horizon Properties

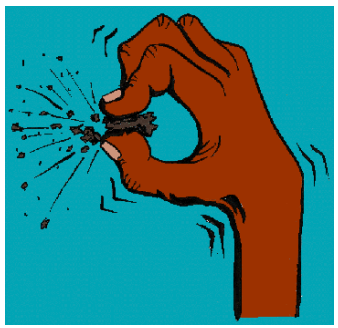
Soil Consistence (continued)

Loose: You have trouble picking out a single ped and the structure falls apart before you handle it.*

Friable: The ped breaks with a small amount of pressure.

* Soils with “single grained” structure **always** have loose consistence.

Firm: The ped breaks when you apply a good amount of pressure and dents your fingers before it breaks.



Extremely Firm: The ped can’t be crushed with your fingers (you need a hammer!).

Horizon Properties

Soil Texture

- The way a soil “feels” is called the soil texture.

- Soil texture depends on the amount of each size of particle in the soil.

- Sand, silt, and clay are names that describe the size of individual particles in the soil.

  Sand are the largest particles and they feel “**gritty**.”

  Silt are medium sized, and they feel soft, silky or “**floury**.”

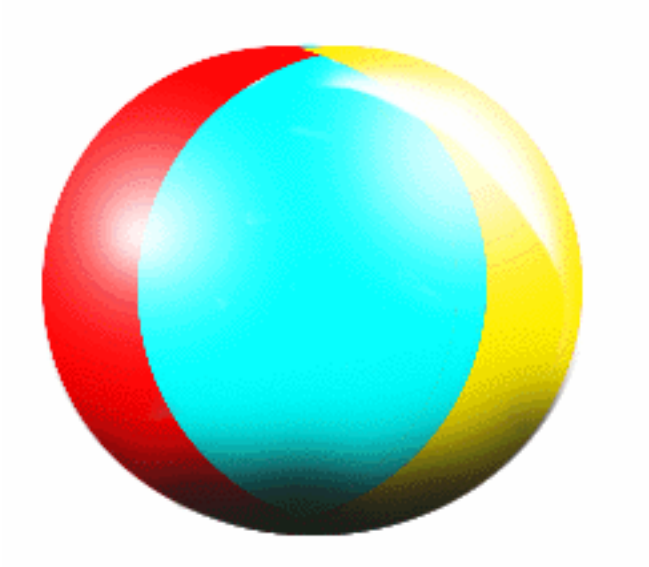
  Clay are the smallest sized particles, and they feel “**sticky**” and they are hard to squeeze.

Horizon Properties

Soil Texture (continued)

Relative Size Comparison of Soil Particles

beachball

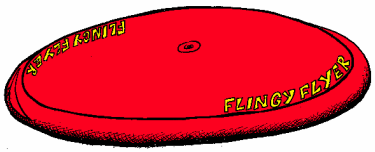


Sand
(feels gritty)

(2.00 - 0.05 mm, USDA)

(2.00 - 0.02 mm, ISSS)

frisbee



Silt
(feels floury)

(0.05 - 0.002 mm, USDA)

(0.02 - 0.002 mm, ISSS)

dime

Clay
(feels sticky)

(< 0.002 mm, USDA)

(< 0.002 mm, ISSS)

Horizon Properties

Soil Texture (continued)

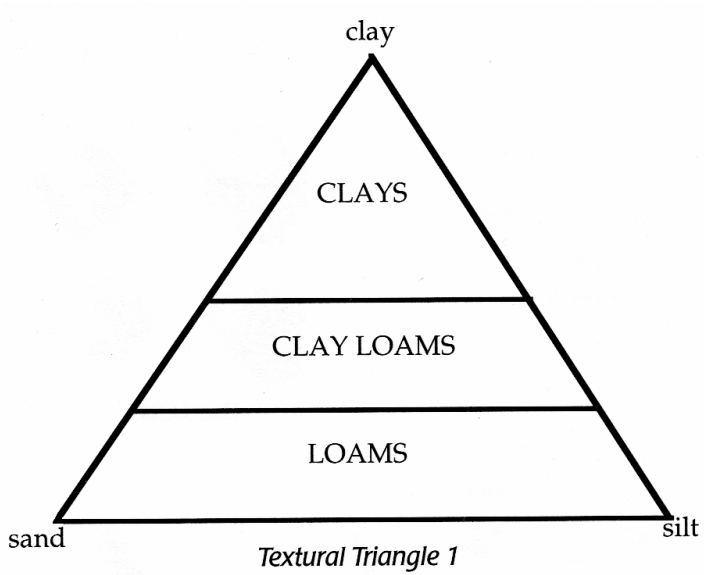
To Determine Soil Texture

Step 1. Start with triangle #1

- Test for CLAY first: If the soil is sticky, hard to squeeze, can form a long ribbon or worm without breaking, stains your hands, has a shine when rubbed, call it a CLAY **(using triangle 1)**.

- If it is like a clay but much softer and not as sticky, call it a CLAY LOAM **(using triangle 1)**.

- If it is very soft and is not like a clay at all, call it a LOAM **(using triangle 1)**.



Textural Triangle 1

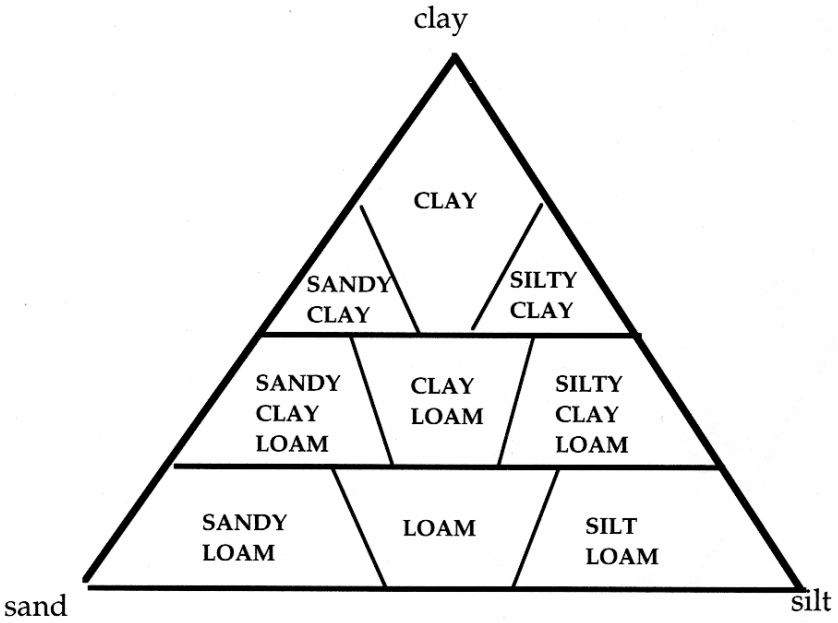
Horizon Properties

Soil Texture (continued)

To Determine Soil Texture

Step 2. Use triangle #2

- Next try to feel for sand. If the soil has a "gritty," sandy feel to it, add the word SAND (or SANDY) to the classification from triangle 1 **(see triangle 2)**.
- If you can't feel any sand, and the soil has a smooth feel (like flour), add the word SILT (or SILTY) **(see triangle 2)**.
- If you can feel "**some**" sand, but not a lot, keep the same classification you had from triangle 1, and don't change it.
- Record the texture class name of your soil sample.



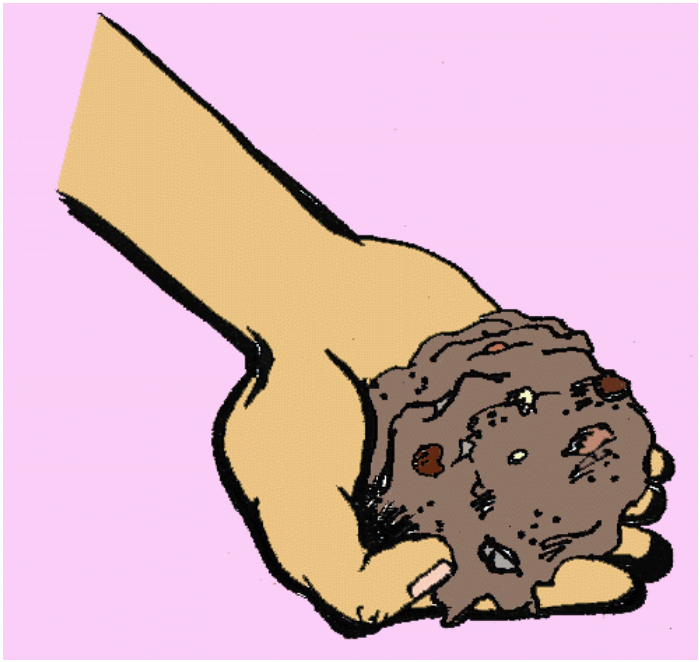
Textural Triangle 2

Horizon Properties

Presence of Roots and Rocks

Presence of Roots

Observe and record if there are **none**, **few**, or **many** roots in the horizon.



Presence of Rocks

Observe and record if there are **none**, **few**, or **many** rocks* in the horizon.

* A rock is defined as being larger than 2 mm in size.

Horizon Properties

Test For Free Carbonates

Free carbonates are compounds that coat soil particles. They form under certain conditions such as in dry climates where the pH is above 7. They are also found in some soil profiles that have parent materials made of carbonates (such as limestone).

This test is performed by squirting vinegar on the soil. If free carbonates are present, they will "effervesce" or bubble when the vinegar reacts with them. Record one of the following based on your observation:

None: you observe no reaction (the soil has no free carbonates).

Slight: you observe a slight amount of bubbling (the soil is coated with some carbonates).

Strong: you observe a strong reaction (many bubbles) (the soil has many carbonate coatings present).